

# Installation Instructions

**MG-2/BIR3**

**Express® Lavatory System - MG Series with Battery Infrared Control**



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### IMPORTANT

**Read this entire installation manual to ensure proper installation.**

**Flush all the water supply lines before making connections.**

**Wall anchors used must have a minimum pull-out rating of 1,000 lbs.**

**File these instructions with the owner or maintenance department.**

**Product warranties may be found under "Product Information" on our web site at [www.bradleycorp.com](http://www.bradleycorp.com).**



## **Pre-Installation Information**

### **Barrier-free and ADA compliant - standard height mounting**

The MG-2/BIR3 Express® Lavatory System with Battery Infrared Control must have a rim height no higher than 34" above finished floor to be compliant with Americans with Disabilities Act (ADA). When mounted at 34" rim height, the MG-2/BIR3 Express® meets ADA, ANSI and UFAS requirements for barrier-free clearances, reaches and controls. Always check local codes and ordinances for compliance.

### **Barrier-free and ADA compliant - juvenile height mounting**

The MG-2/BIR3 Express® Lavatory System with Battery Infrared Control must have a rim height no higher than 30" above finished floor to be compliant with Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities: Building Elements Designed for Children's Use; Final Rule.

### **Texas Accessibility Standards compliant:**

The MG-2/BIR3 Express® Lavatory System with Battery Infrared Control meets Texas Accessibility standards (TAS) for barrier-free clearances, reaches and controls. Always check local codes and ordinances for compliance.

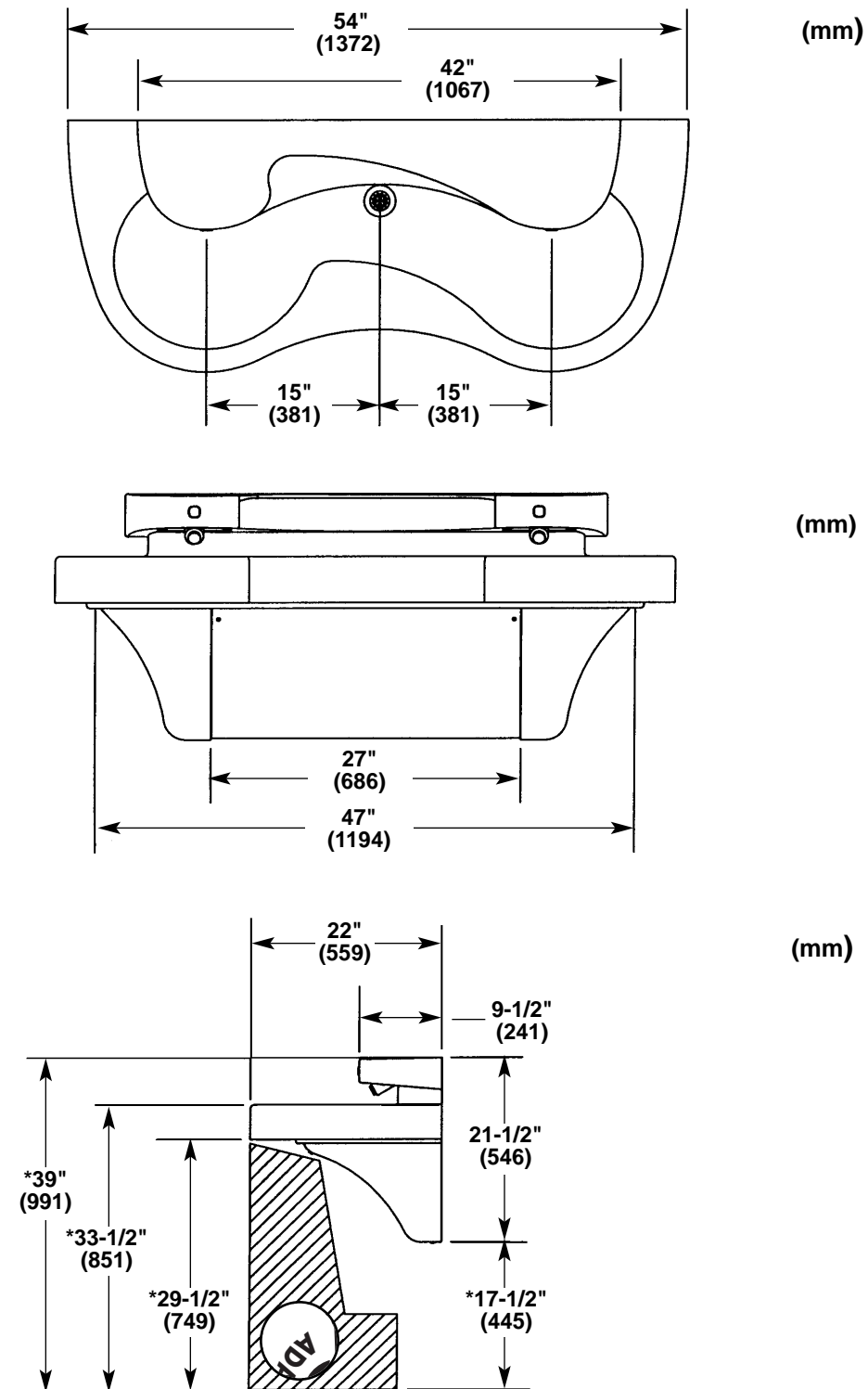
### **Infrared sensor and solenoid**

Each sprayhead is controlled by a separate sensor and solenoid valve, enabling each user to activate a single flow of water. Each valve uses less than half the maximum of hot water allowed by the ANSI/ASHRAE/IES 90A-1980 Standard.

### **Supplies required for installation:**

- (8) 3/8" wall anchors, bolts and washers to mount frame and bowl to wall (minimum pull-out rating of 1,000 lbs.)
- 1/2" NPT hot and cold supply piping and 1-1/2" NPT drain piping
- 1/2" NPT street elbow

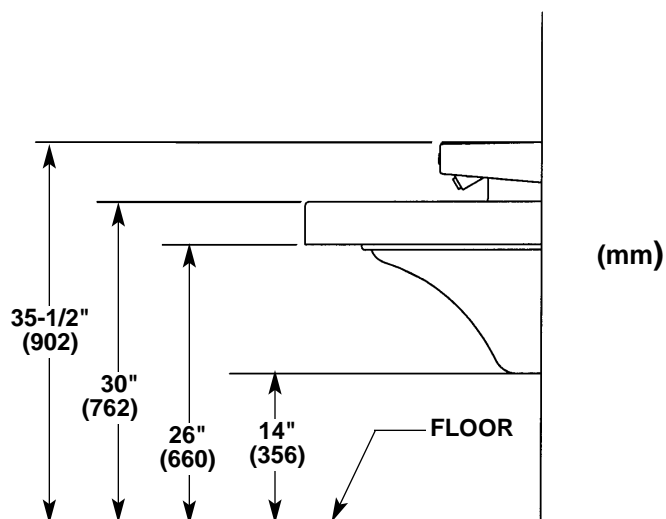
## MG-2/BIR3 Express® Lavatory System Dimensions



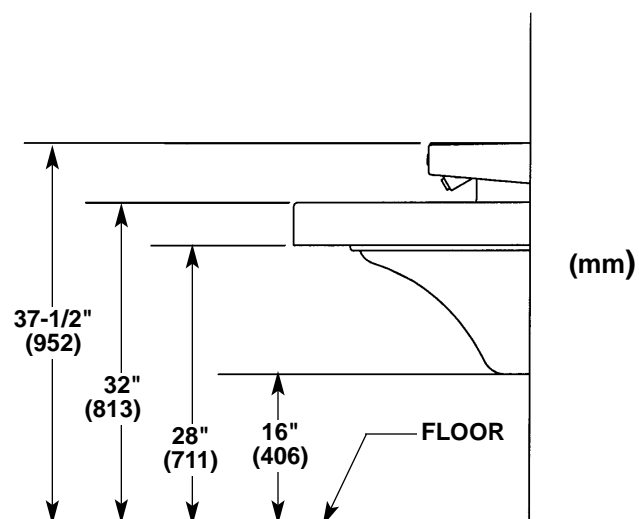
\*Subtract 4" from vertical dimensions for compliance with ADA guidelines for children's use.

## Dimensions *continued* . . .

### TAS Juvenile Height Grades Pre-K thru 5 or 6



### TAS Juvenile Height Grades 6 thru 8 or 9



## Installation Instructions

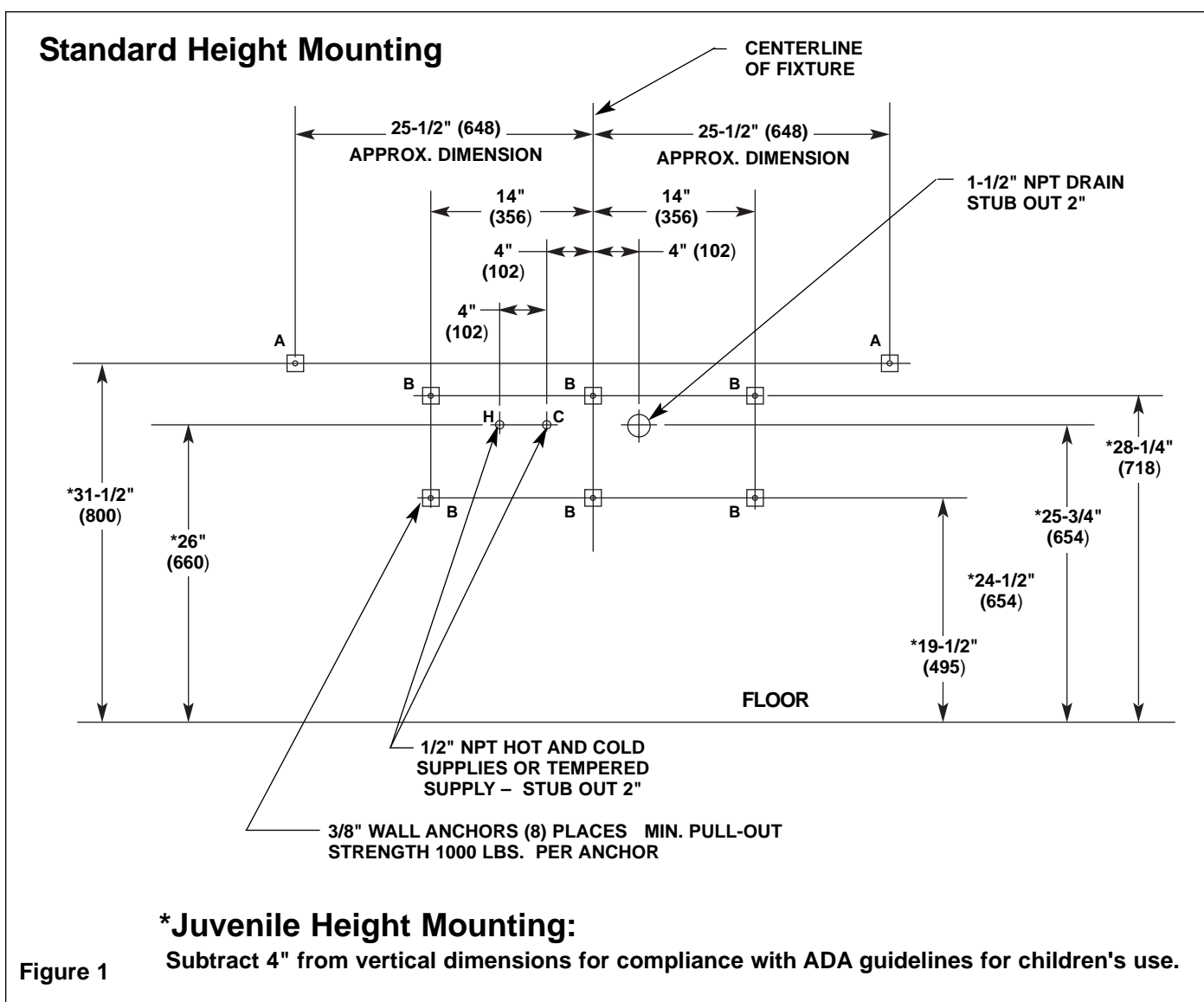
### Step 1: Rough in supplies and optional hot water heater

*NOTE: See Figure 1 (below), 1a, 1b (for TAS on page 6) and Figure 2 (on page 7) when roughing in the MG-2/BIR3 Express®.*

**IMPORTANT:** Flush the supply lines before making connections. Debris in supply lines will cause the valves to malfunction.

**IMPORTANT:** Dimensions shown in Figure 1 are for Standard Height Mounted MG-2/BIR3 Express®.

1. Rough in 1/2" NPT hot and cold supply lines through wall at dimensions shown.
2. Rough in 1-1/2" NPT drain waste connection through wall at dimensions shown.



TAS - Texas Accessibility  
Standards:  
Juvenile Height (grades  
Pre-K thru 5 or 6)

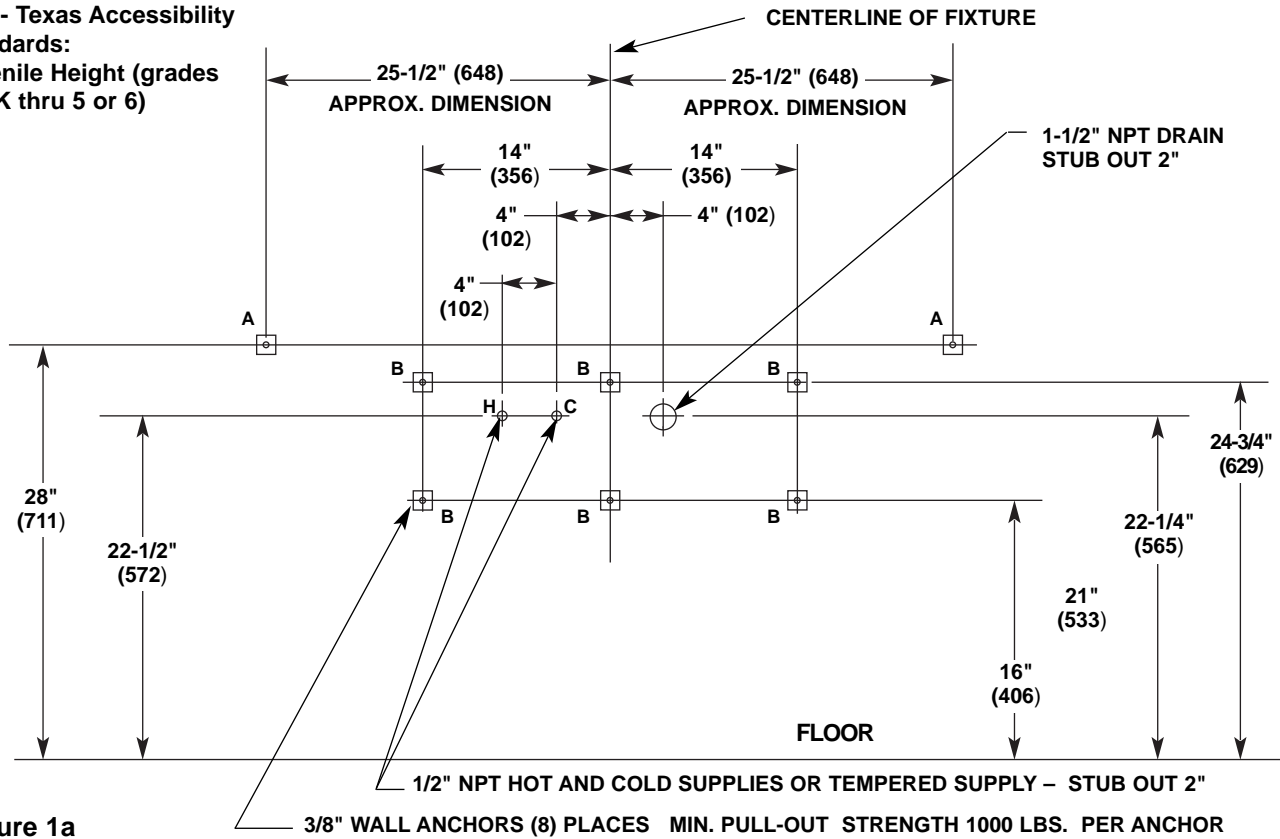


Figure 1a

TAS - Texas Accessibility  
Standards:  
Juvenile Height (grades 6  
thru 8 or 9)

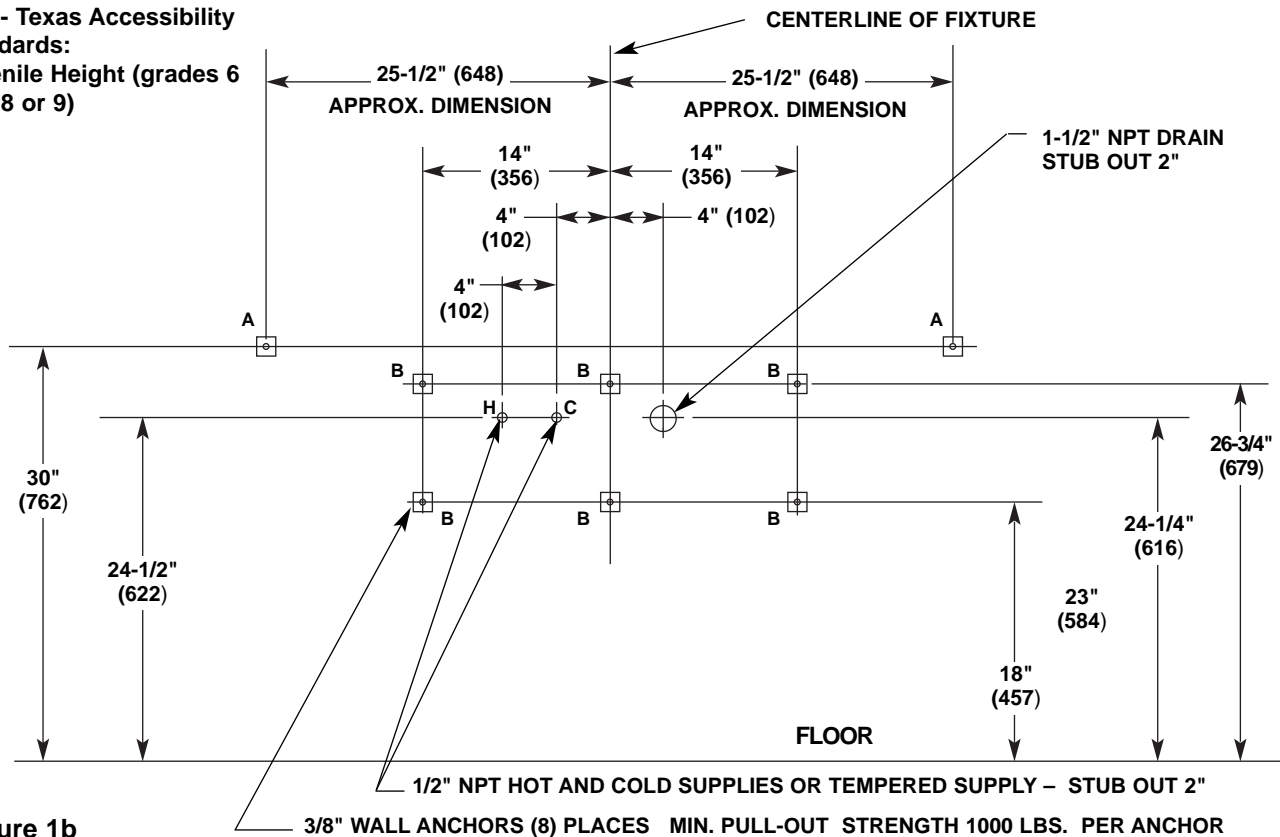


Figure 1b

## Installation Instructions *continued* . . .

### Step 2: Rough in wall anchors

1. Install six 3/8" wall anchors with a minimum pull-out rating of 1,000 lbs. (supplied by installer) at the locations marked (ref. location "B" shown in Figure 1, 1a or 1b on pages 5-6).

*NOTE: The dimensions for the wall anchors at location "A" are for reference only.*

2. On the back of the bowl, measure the distance between the 3/4" bowl mounting holes. Divide this measurement in half. Measure and mark this dimension on the wall to the left of the centerline and to the right of the centerline. Install two 3/8" wall anchors with a minimum pull-out rating of 1,000 lbs. (supplied by installer) at the locations marked (ref. location "A" shown in Figure 1, 1a or 1b on pages 5-6).

*NOTE: The anchors will be used to mount the Express® MG-2/BIR3 bowl and frame to the wall.*

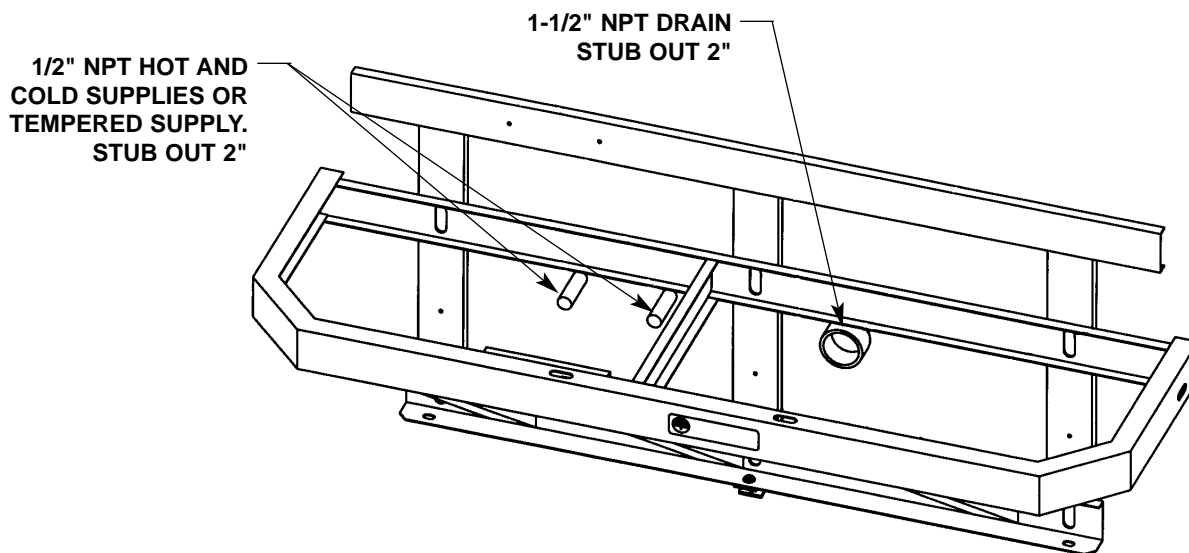


Figure 2

## Installation Instructions *continued* . . .

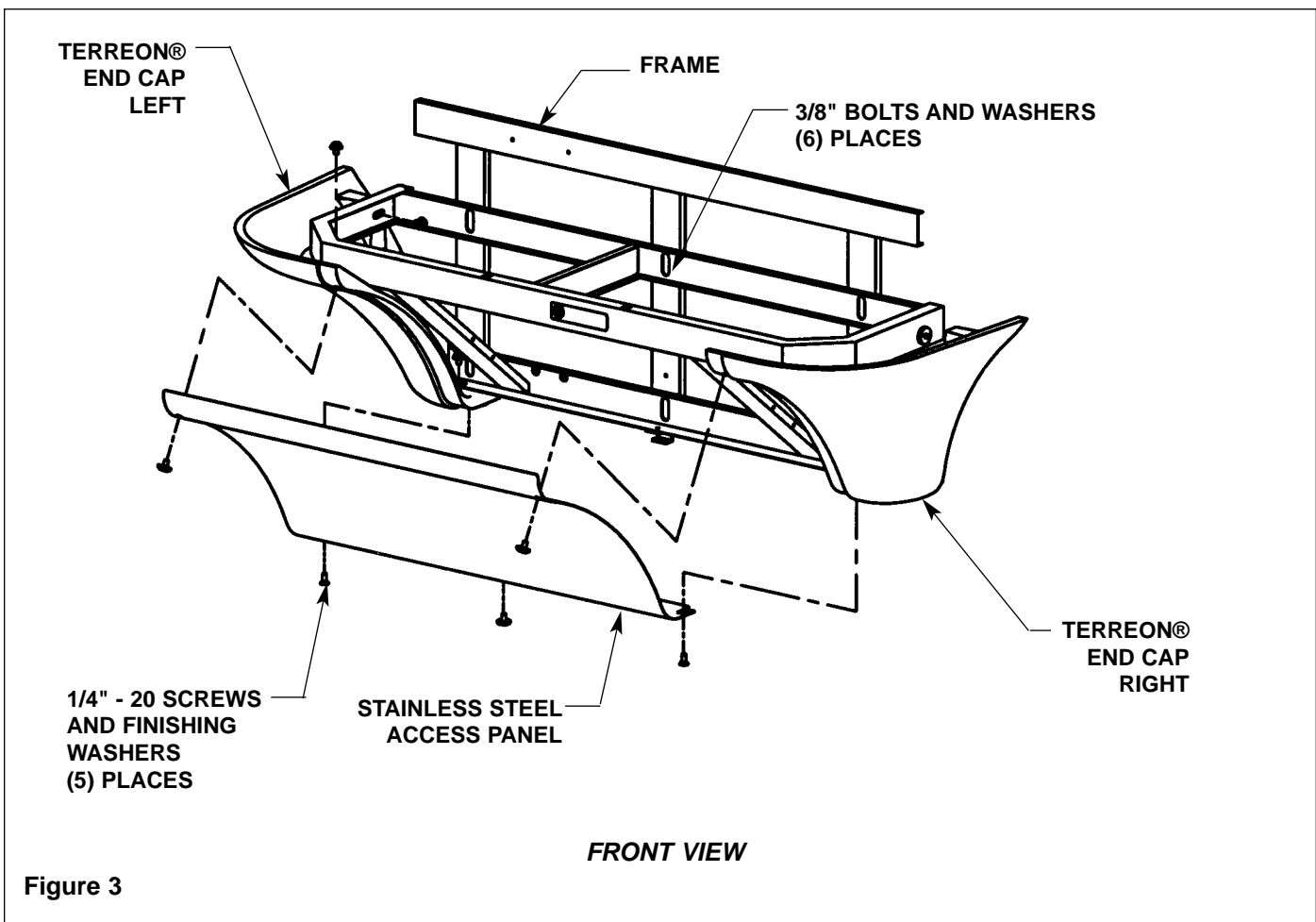
### Step 3: Mount frame to wall

1. Loosen, but do not remove the bottom three access panel screws.
2. Remove the two top access panel screws and washers securing the access panel to the frame and remove the access panel (see Figure 3).
3. Position the frame with Terreon® End Caps attached, against the wall, ensuring that it is level.



**IMPORTANT:** Anchoring the frame to a wall that is *not* flat may cause the frame to bend. If necessary, install shims to compensate for wall distortion.

4. Ensure that the back of the frame is flat against the wall. If wall is not flat, insert shims behind the frame to ensure that it will not bend when anchored.
5. Once you have positioned the frame such that it is level and flat against the wall or shimmed, use the 3/8" bolts and washers to mount the frame to the wall.





## Installation Instructions *continued* . . .

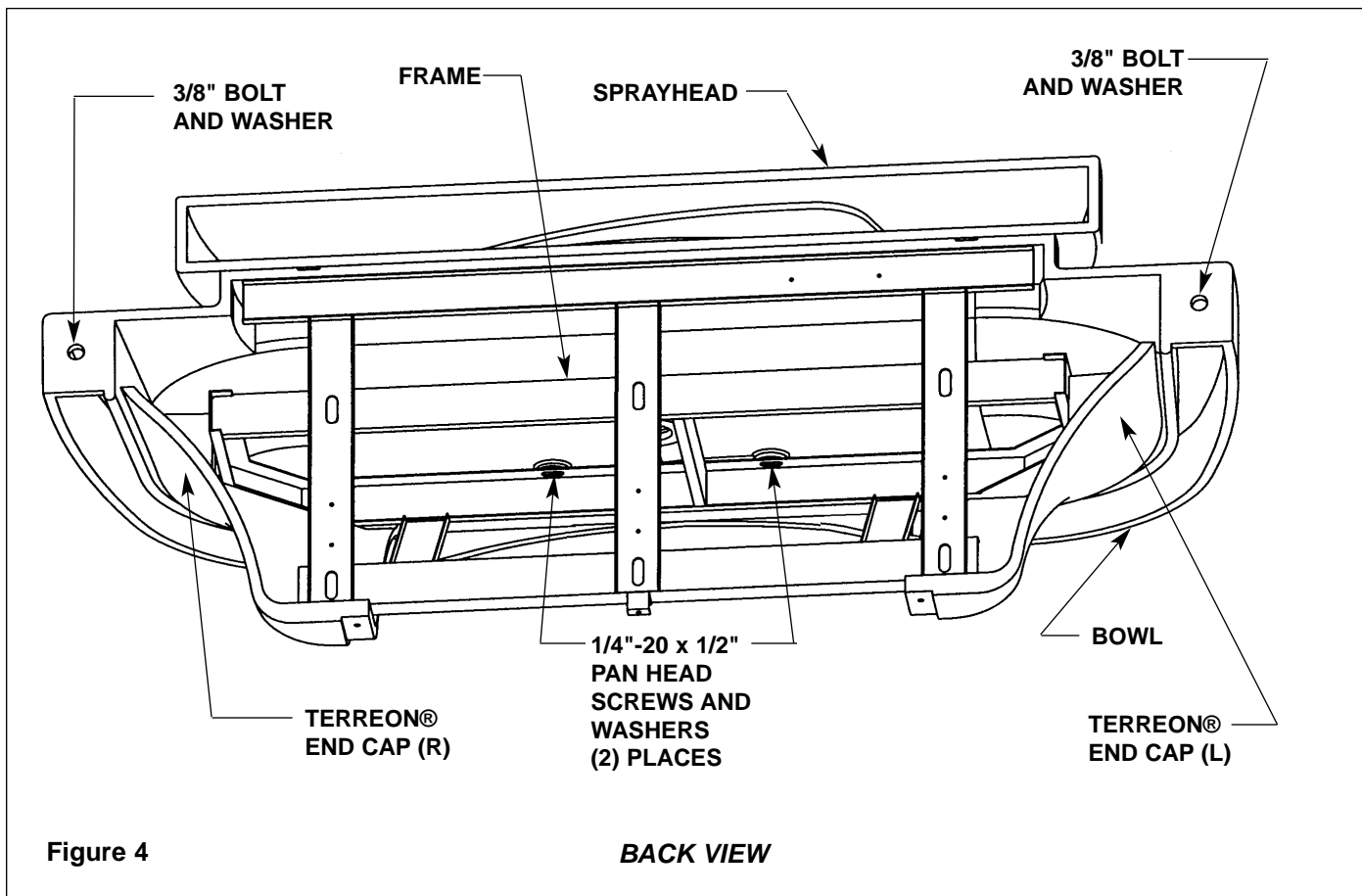
### Step 4: Install bowl assembly

**⚠ IMPORTANT:** See Figure 4 below when installing the bowl assembly. If the fixture has soap option, refer to the soap system installation manual 215-1585 before installing the bowl assembly.

1. With someone to assist you, place the bowl assembly squarely onto the frame being careful not to pinch tubing between bowl and frame.
2. Attach the front of the bowl assembly to the frame using the two 1/4-20 x 1/2" pan-head screws and washers provided. ***Do not tighten screws at this time.***

**⚠ IMPORTANT:** When bolting the bowl assembly to the wall, do not overtighten the bolts. Overtightening bolts can damage the Terreon® material.

3. After the bowl assembly is attached to the frame, install the two 3/8" bolts and washers (supplied by the installer) to bolt the bowl to the wall anchors. ***Do not overtighten bolts.***
4. Tighten the screws installed in procedure #2 above to secure the bowl assembly to the frame. ***Do not overtighten.***
5. If necessary, adjust sprayhead body to fit closely to wall by adjusting sprayhead mounting bolts. See Figure 8 on page 13 for sprayhead mounting bolt locations.



## Installation Instructions *continued* . . .

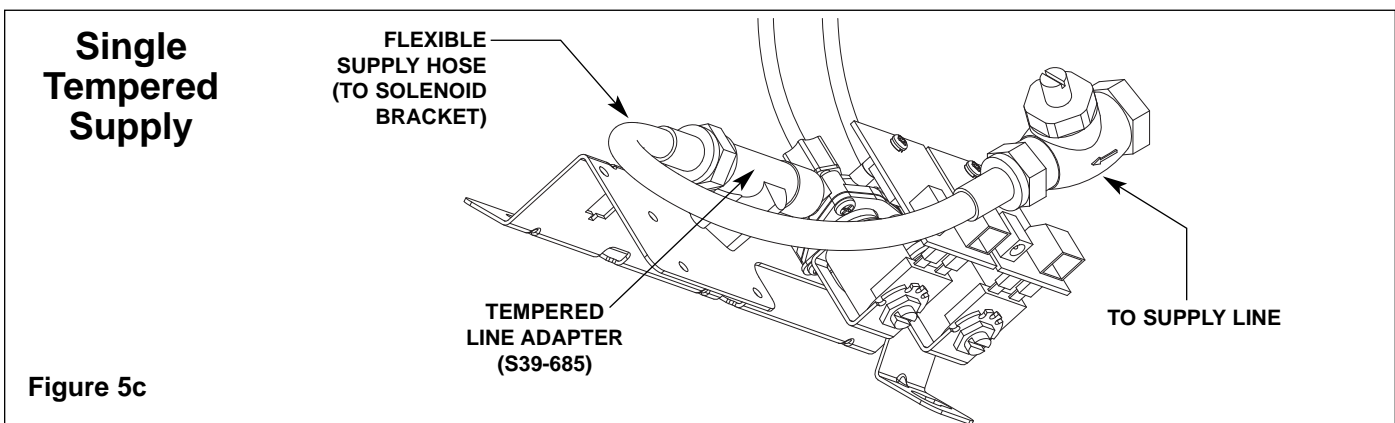
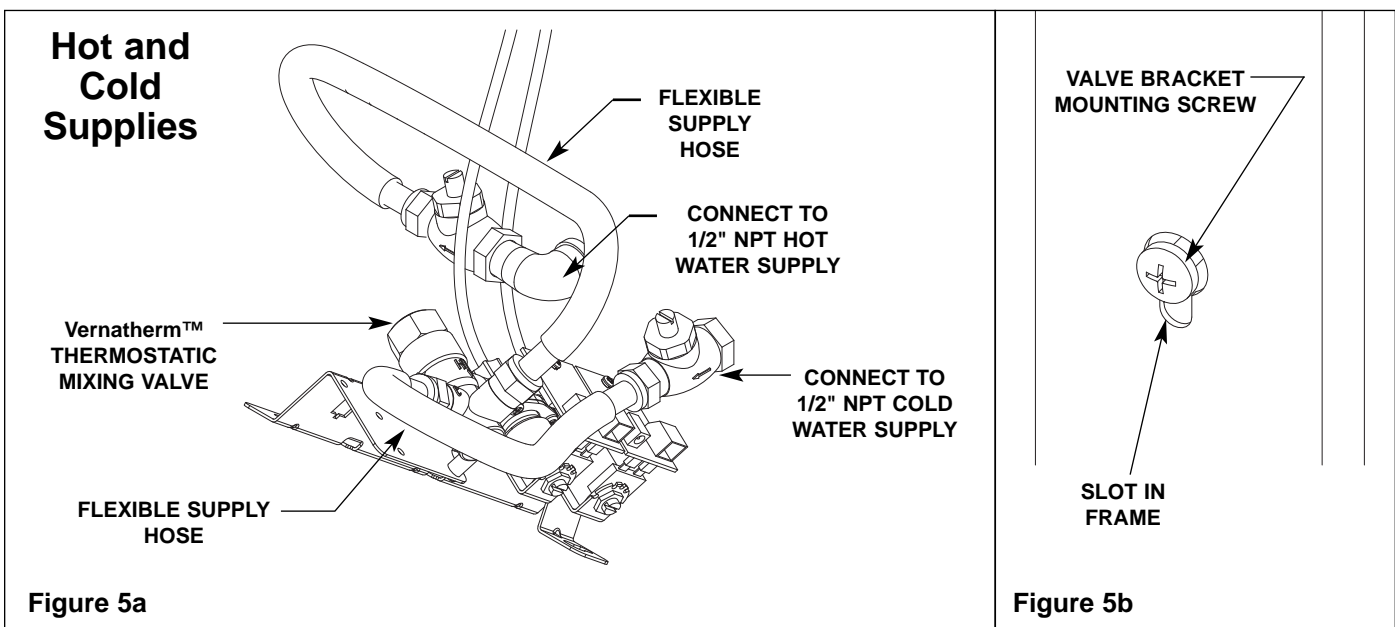
### Step 5: Connecting supply

1. Loosen but do not remove the two mounting screws holding the valve bracket to the frame. Slide the valve bracket up until the larger cutout in the frame's slot aligns with the screw head (see Figure 5b). Then lift up to remove the valve bracket from the frame.
2. FOR HOT AND COLD SUPPLY: Attach the stop/check to the hot and cold water supply piping from the wall. Connect the flexible hoses to the Vernatherm™ Mixing Valve and to the stop/checks (see Figure 5a).

*NOTE: The "H" on Vernatherm™ Mixing Valve indicates hot water supply inlet.*

FOR SINGLE TEMPERED SUPPLY: Attach the stop/check to the 1/2" tempered supply line. Connect the stop/check to the tempered line adapter with the flexible supply hose (Figure 5c).

3. Assemble the P-trap by connecting the 1-1/2" tubular pipe to the tailpiece and to the 1-1/2" drain pipe stubbed out of the wall.
4. Install the strainer on the drain plug opening inside the bowl, and push the strainer firmly into place. Secure the stainer with the screw provided.

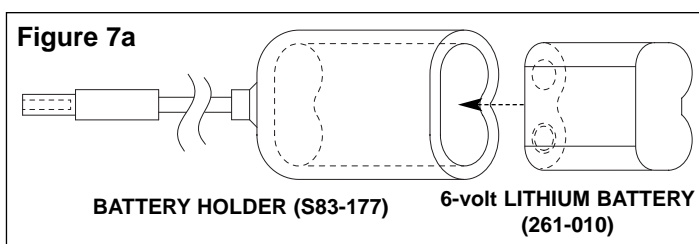


Installation Instructions *continued* . . .**Step 7: Connecting electrical and supply tubing**

**WARNING:** The MG-2/BIR3 must be connected to the 6 VDC battery. Connection to 110 VAC may cause personal injury and/or damage to electronics. Connection of leads other than shown may cause permanent sensor damage.

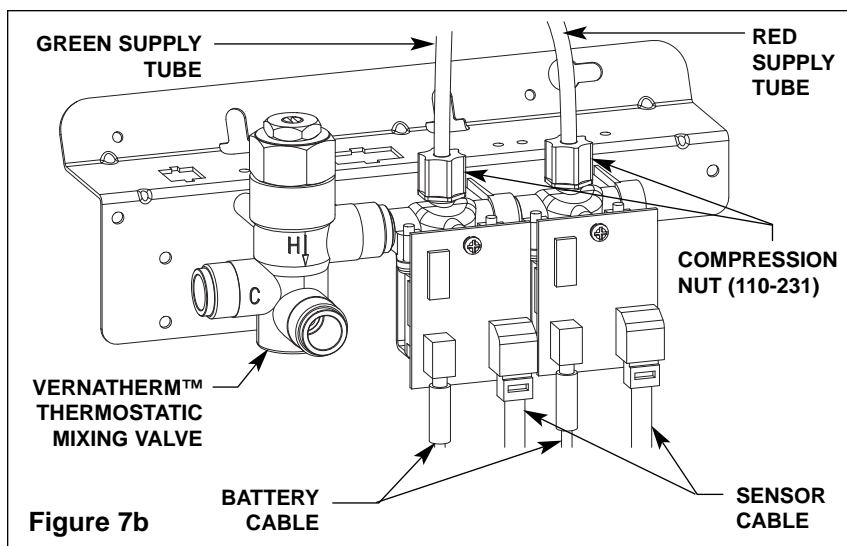
**CAUTION:** To avoid activating the sprayhead valve, make sure to connect the sensor cable plugs to the circuit board before inserting the batteries into the battery holder. If the cable is connected or disconnected while the batteries are installed, the station will activate and continue running for 75 seconds.

1. Snap the sensor plugs from the sprayhead into the proper valve's circuit board.
2. Insert the batteries into the battery holders (see Figure 7a). Mount the battery holders (with batteries) in a convenient location on the frame using the hook-and-loop fastener provided.
3. Snap the battery holder plugs into the female circuit board plugs.
4. Insert the two sprayhead supply tubes into the two solenoid tube connectors by loosening the compression nut and firmly pushing the tubing into the tube connector until the tubes are fully seated, then re-tighten the compression nut by hand (see Figure 7b).
5. Align the valve bracket mounting screws with slots on the frame. Let the valve bracket slide down to lock into place.
6. Turn on the water supply to the MG-2/BIR3 and check for leaks. Pass your hand in front of each station's sensor until all the air is purged from the lines and water is flowing smoothly.




**IMPORTANT:** The Vernatherm™ valve is NOT factory-preset. Upon installation, the valve temperature must be checked and adjusted to ensure delivery of safe water temperature. Water in excess of 110°F (43°C) may cause scalding.

7. Check the temperature when approximately 1.0 GPM water flow is reached and adjust if necessary (the range of the valve is 95°F–115°F (35°C–43°C). To adjust the temperature, first loosen the temperature locking nut with a wrench. Then using a blade screwdriver, turn the adjustment stem **counterclockwise** to **increase** the temperature or **clockwise** to **decrease** the temperature. Once desired temperature is reached, tighten the nut to prevent temperature change.



8. After testing is complete, reinstall access panel to frame. Fasten access panel with the five panel screws and washers provided (see Figure 3 on page 8).

## Cleaning and Maintenance Instructions

 **IMPORTANT:** Strong alkaline or acid-based chemicals and cleansers should not be used to clean the MG-2/BIR3 Express®. If these chemicals come in contact with the Terreon® surface, wipe off the surface immediately and flush with soapy water. Avoid unnecessary or prolonged contact with hot pans and objects.

### Terreon® and panel maintenance

The bowl, sprayhead and pedestal end caps are made of Terreon®, a solid cast polyester resin material. Terreon® resists chemicals, stains, burns and impact, and is repairable with everyday cleaners or fine-grit abrasives. The panel is made of stainless steel. With regular cleaning, your MG-2/BIR3 Express® will provide years of dependable service.


### Stainless Steel Access Panel cleaning

Stainless steel is extremely durable, and maintenance is simple and inexpensive. Proper care, particularly under corrosive conditions, is essential. Ordinary deposits of dirt and grease are quickly removed with soap and water. Whenever possible, the metal should be thoroughly rinsed and dried after washing. To remove tightly adhering deposits, use stainless steel polishing powder. In all cases, rub in the direction of the stainless steel grain.

 **IMPORTANT:** Never use ordinary steel wool or steel brushes on stainless steel. Always use stainless steel wool or stainless steel brushes.

Avoid prolonged contact with chlorides, bromides, thiocyanates, and iodides on stainless steel equipment, especially if acid conditions exist. Do not permit salty solutions to evaporate and dry on stainless steel. The appearance of rust streaks on stainless steel leads to the belief that the stainless steel is rusting. Look for the source of the rust in some iron or steel particles which may be touching, but not actually a part of the stainless steel structure. *NOTE: Strongly acidic or caustic cleaners may attack the steel causing a reddish film to appear. The use of these cleaners should be avoided.*

### Terreon® Bowl, Sprayhead and Pedestal End Cap cleaning

 **IMPORTANT:** To sustain original finish, additional care is recommended for dark colored solid surfaces to maintain highest quality color. The original luster can be maintained by periodically applying furniture polish, mineral oil or a solid surface cleaner or polish. For more information on restoring dark colors, see Bradley document #1505. Length of time between applications varies with usage.

- For regular cleaning, use standard commercial or household products such as Formula 409® or Windex®.
- Remove tough stains with Ajax®, Comet® or Soft-Scrub® and a green Scotch-Brite® pad or lightly sand in a circular motion with 240 grit wet/dry sandpaper. The finish can be renewed with a maroon Scotch-Brite® pad.
- Remove scratches with a green Scotch-Brite® pad. The finish can be renewed with a maroon Scotch-Brite® pad. Remove hard water build-up with a mild solution of vinegar and water.
- \* Use of brand names is intended to indicate a type of cleaner and does not constitute an endorsement.
- \*\* It is emphasized that all products should be used in strict accordance with package instructions.
- **Repair kit:** A repair kit is available from Bradley to repair/patch the Terreon® bowl and shelf. Contact your Bradley representative to order a repair kit and be sure to specify color.

## Assembly of Components

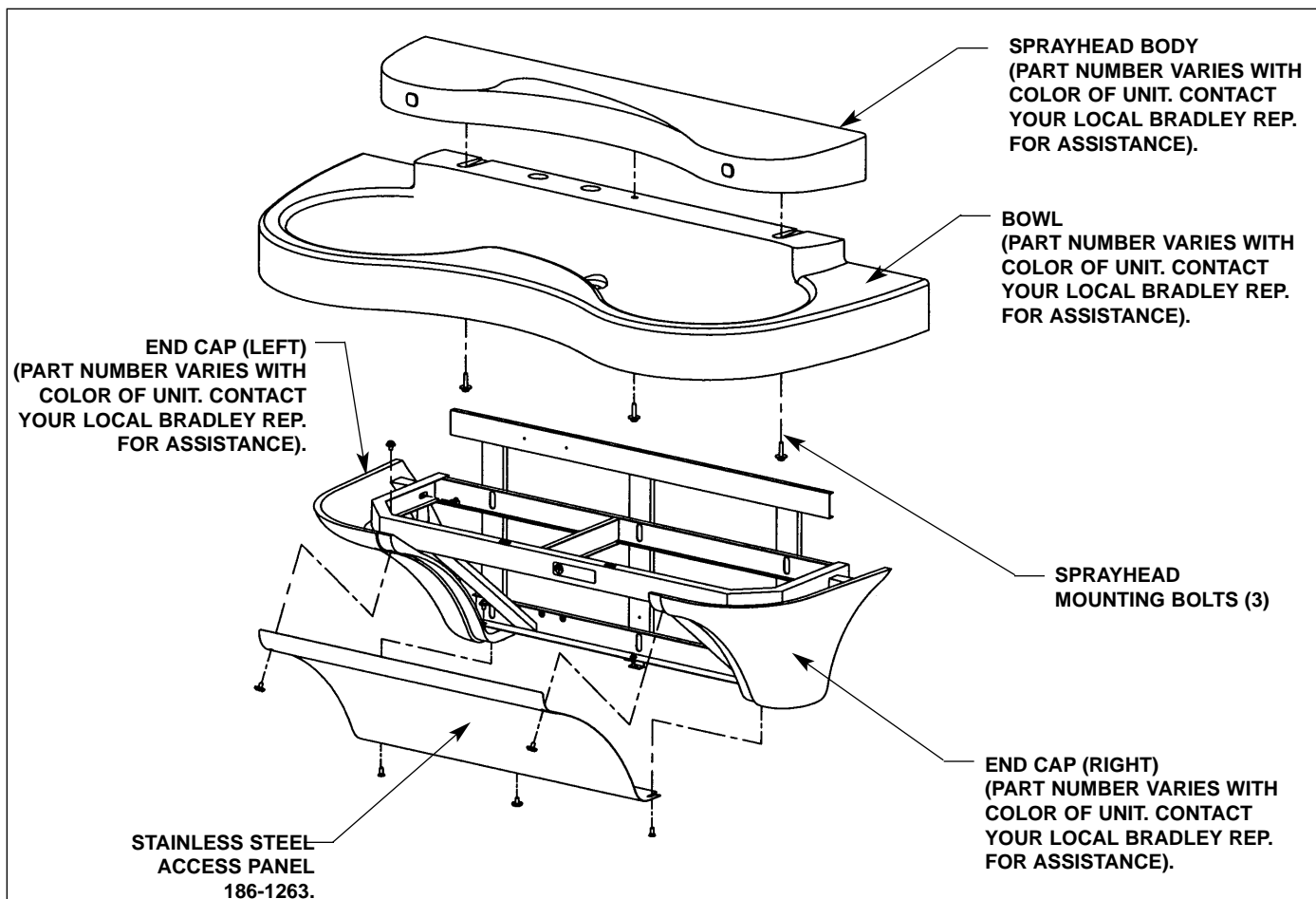
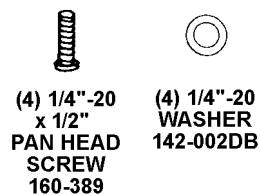


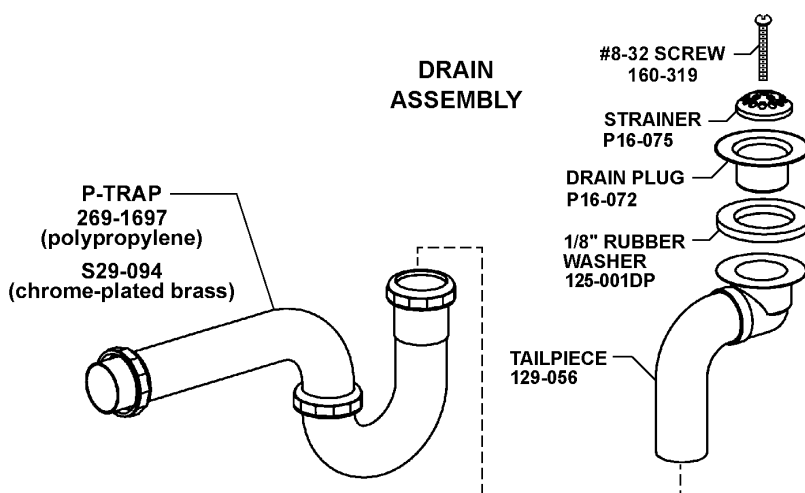
Figure 8

## Other replacement parts

### BOWL MOUNTING HARDWARE



### DRAIN ASSEMBLY



## Assembly of Components *continued* . . .

### Sensor assembly and solenoid valve access

- **To access solenoids:**

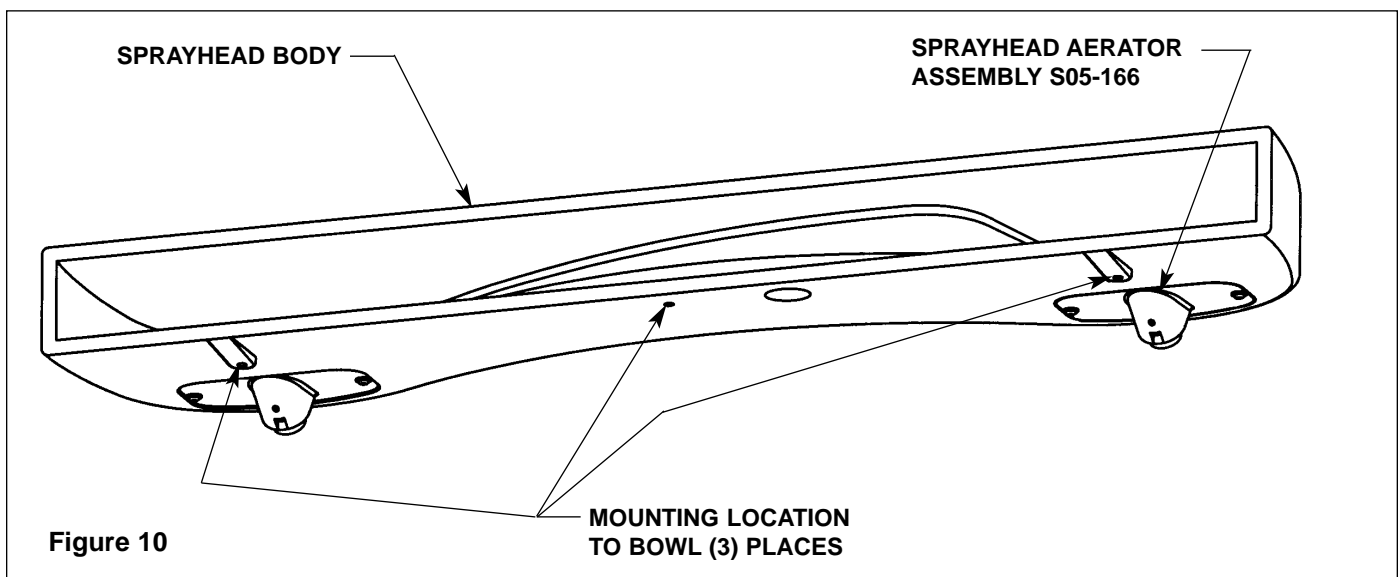
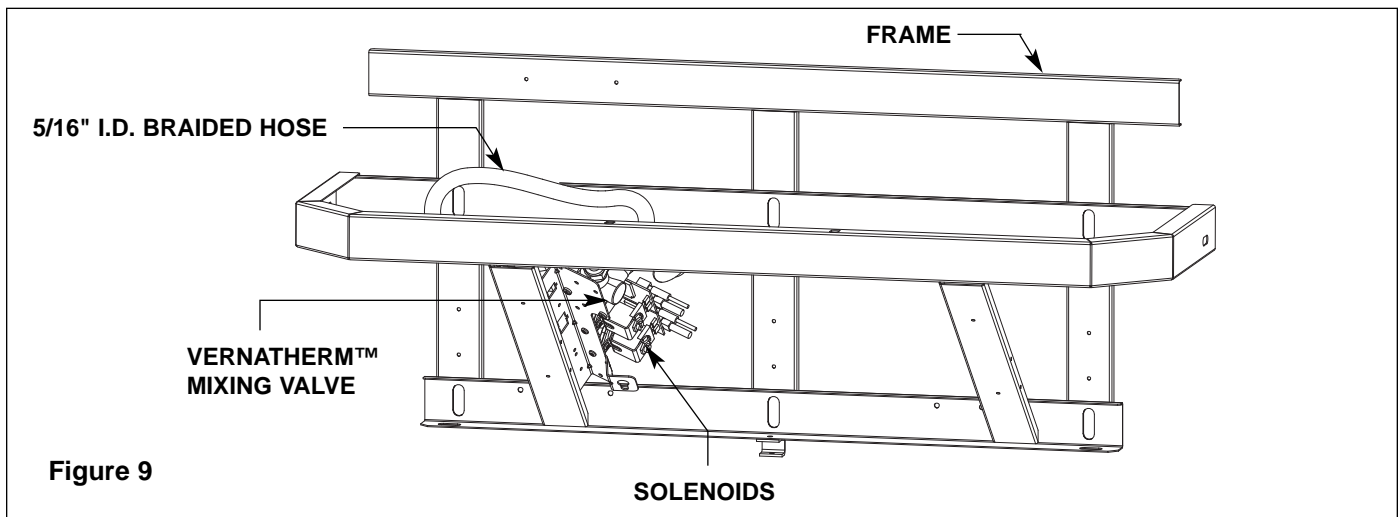
Using a 5/32" Allen socket wrench, loosen, but do not remove the bottom three access panel screws. Remove the two top access panel screws and washers securing the panel to the frame and remove the access panel (see Figure 3 on page 8). Solenoids are located on left side of frame (see Figure 9).

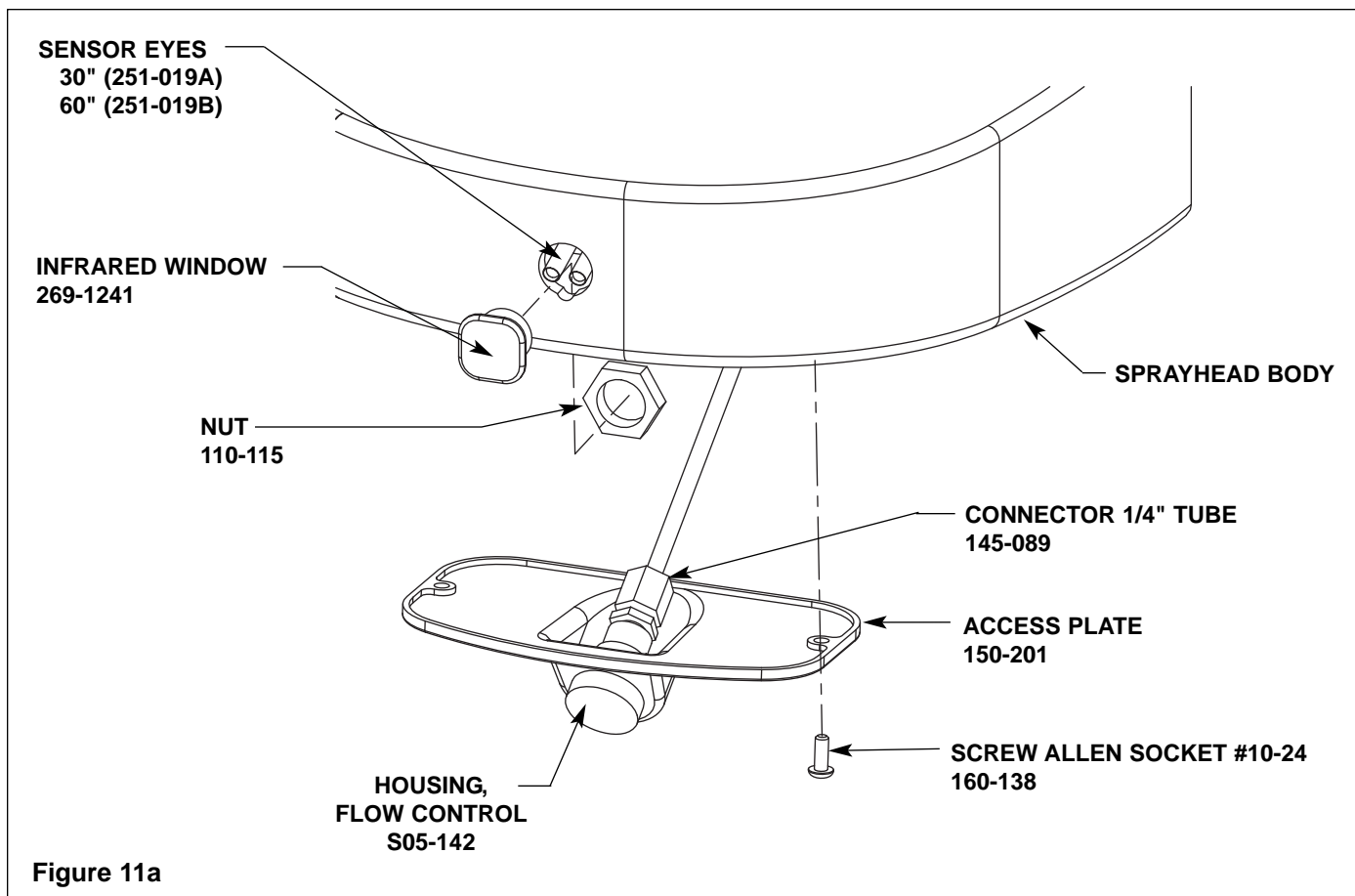
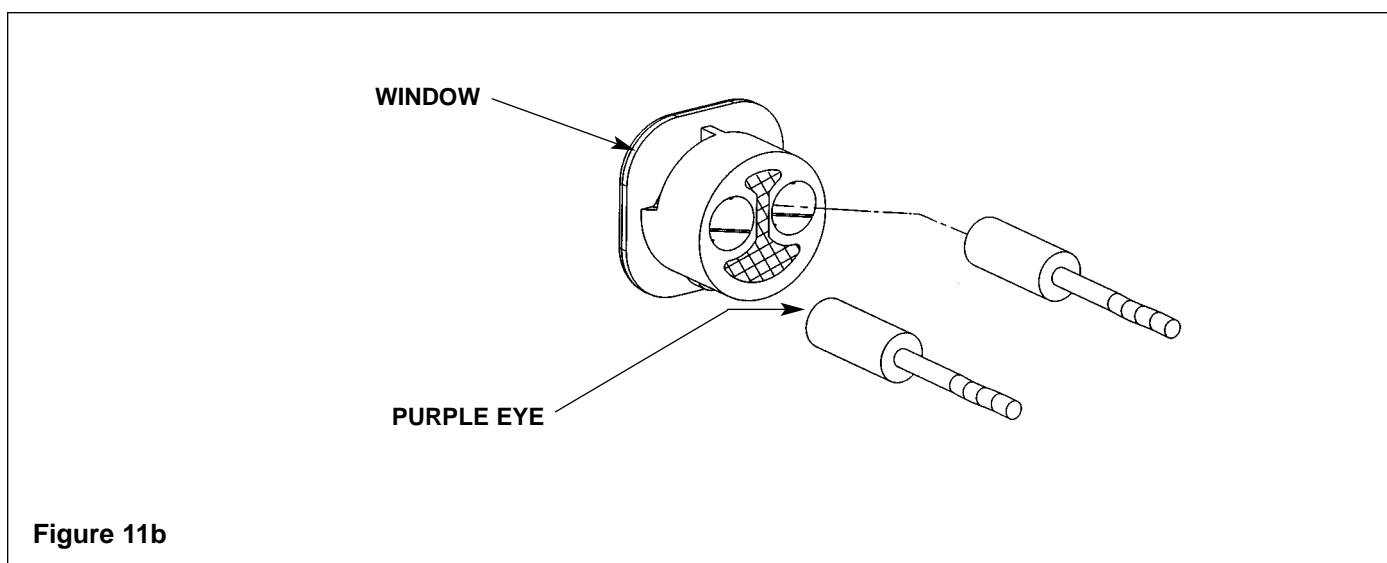
- **To remove sprayhead:**

Remove (3) bolts located underside of bowl neck (see Figures 8 and 10). Carefully remove sprayhead from bowl.

- **To access sprayhead/aerator/lens and sensor assembly:**

Remove (2) screws and washers from the access plate assembly using a 1/8" Allen socket wrench. The access plate assembly is located underneath the sprayhead (2) places (see Figure 11a on page 15), the assembly will drop down to access the lens, sensor, and sensor eyes, housing flow control and tube connector.



**Assembly of Components** *continued . . .***Figure 11a****Figure 11b**



## Troubleshooting BIR3 Components



**CAUTION:** Turn off water supplies to unit before troubleshooting.

**Problem:** An individual operating station drips and fails to shut off.

**Cause:** There is debris trapped between the diaphragm and the valve seat.

**Solution:** Remove debris between diaphragm and the valve seat.

Disconnect the plug from the battery to the circuit board of the problem valve. Remove the three #8 Phillips-head screws that hold the solenoid valve assembly together. Be careful not to lose the armature or spring (see Figure 13 on page 17). Remove the diaphragm. Remove any particles that are trapped between the diaphragm and the valve seat. Rinse off the diaphragm and inspect for damage. Make sure the center orifice and both small side orifices are open. Reassemble in reverse order, being careful not to overtighten the Phillips-head screws or you may crack the plastic valve body. Tighten until the armature plate makes contact with the plastic body. Reconnect the battery plug per diagram on page 11. Turn on water supplies to the unit.

**Problem:** An individual operating station fails to turn on or off.

**Cause:** A dead or faulty battery.

**Solution:** Test the station to determine cause and replace battery if required.

Disconnect the plug from the battery to the circuit board of the problem valve. Disconnect the plug from the battery to the circuit board of an adjacent valve. Connect the battery plug from the adjacent working valve to the problem valve. Wait for ten seconds. Activate the problem station's sensor ten times. The station should turn on. If the station turns on, and cycles normally, replace the battery.

**Cause:** Faulty sensor eyes.

**Solution:** Test station to determine cause; replace sensor eyes if required.

Disconnect the sensor cable from the circuit board of the problem valve. Disconnect the sensor cable from the circuit board of an adjacent working valve. Connect the sensor cable from the adjacent working valve to the problem valve. Activate the problem station's sensor. The station should turn on. If the station turns on and cycles normally, replace the sensor eyes.

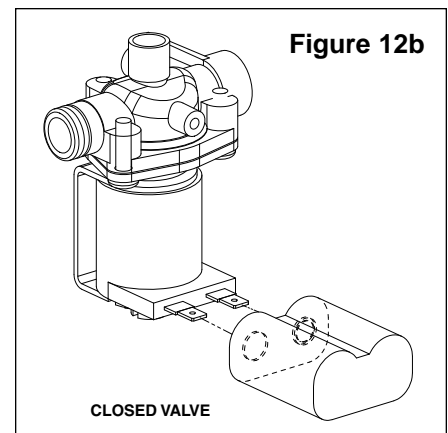
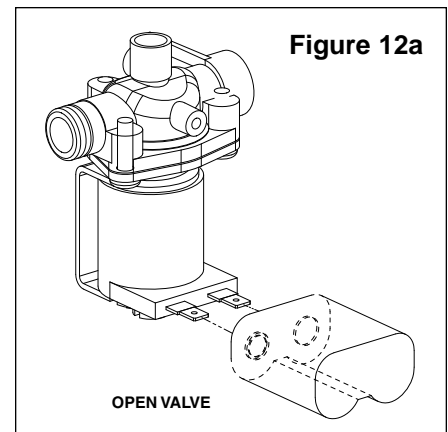
**Cause:** Faulty solenoid valve.

**Solution:** Test station to determine cause; replace solenoid valve if required.

Remove the screw, circuit board and standoff from the problem valve. Remove the battery holder. With a good working battery, briefly contact the solenoid valve directly with the battery as shown in Figure 12a. The contact should cause the valve to open. With the battery holder removed, briefly contact the solenoid valve with the battery in the position shown in Figure 12b. This should cause the valve to close. If the valve does not operate when directly contacted with a good battery, and the solenoid valve has already been cleaned as outlined at the beginning of this troubleshooting section, replace the solenoid valve.

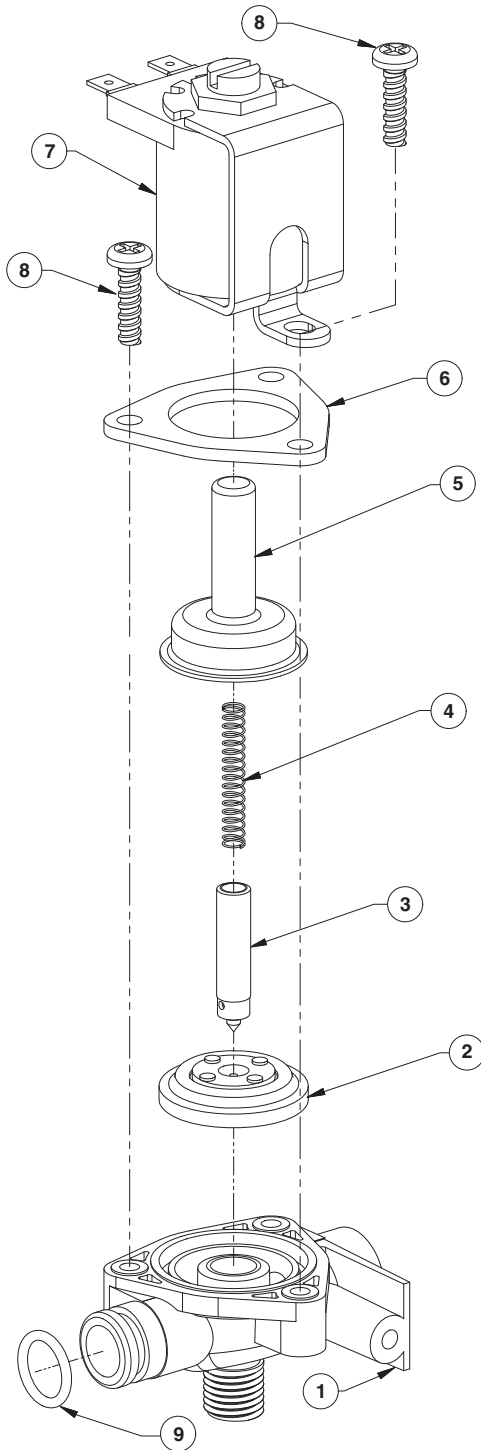
### If problems persist:

Pass your hand in front of the problem station, while at the same time looking to see if the indicator light on the circuit board flashes (the indicator light is located near the hole in the circuit board where the standoff is mounted). If it does not flash, and the battery and sensor eyes have already been tested as outlined above, the problem may be with the circuit board. Make a note of the numbers printed on the circuit board, then contact your Bradley representative for assistance.





## Solenoid Valve S07-072 (closed body) and S07-072A (thru body)



REF.	QTY.	PART NO.	DESCRIPTION
1	1	118-307	VALVE BODY, 1/4" CLOSED
1	1	118-307A	VALVE BODY, 1/4" THRU
2	1	269-983	DIAPHRAGM
3	1	192-017	ARMATURE
4	1	135-093	SPRING
5	1	269-1729	ARMATURE HOUSING
6	1	269-1730	CLAMP, ARMATURE HOUSING
7	1	269-1731	COIL, SOLENOID VALVE
8	3	160-447	SCREW, #8 X 5/8
9	1	125-165	O-RING, #2-013

### SOLENOID VALVE W/CIRCUIT BOARD

CLOSED BODY  
(S07-082)

THRU BODY  
(S07-082A)

CIRCUIT BOARD  
(S83-178)

PAN-HEAD SCREW  
6-19 x 3/4"  
(160-451)

VALVE ASSEMBLY  
CLOSED BODY  
(S07-072)  
THRU BODY  
(S07-072A)

Figure 13

## Thermostatic Mixing Valve Maintenance and Troubleshooting

*NOTE: Before attempting to troubleshoot the valve or disassemble the components, check for the following conditions:*

- *If stop/check valves are used, make sure that they are fully open.*
- *Make sure that the hot and cold inlet pipes are connected properly, and that there are no cross-connections or leaking stop/check valves.*
- *Check the hot water heater output to make sure that it is at least 20° F above the set temperature.*

*Be sure to close the appropriate shut-off valves prior to disassembly of the valve and reopen the valves after inspection and repair is complete.*

### Problem: Limited water flow

*Cause: Dirt and debris have built up in the valve or strainer.*

1. Remove and clean strainer (see Figure 14 or 15 on page 19). If strainer needs to be replaced, order Bradley part no. 173-028.
2. Check the piston for smooth movement.

To check the valve's piston for free and smooth movement, follow the procedures outlined below:

1. Remove the valve's cap and thermostat (see Figure 14 on Page 19).
2. Push down on the piston with your finger (the piston should move freely). If the movement is not as it should be, the piston needs to be cleaned. Follow the method outlined below for cleaning the piston and valve body:
  - Remove the thermostat.
  - Lift the piston out with a needle-nose pliers and remove the spring.
  - Any cleaner suitable for brass and stainless steel may be used (if cleaning with suitable cleaner is not sufficient to remove debris, a 400-grit sandpaper may be used to polish and hone the piston and valve body).
  - Snap spring into piston (will detent) and reassemble into the valve body. Retest the piston.
3. If, after a thorough cleaning, the piston does not move freely, the piston must be replaced. Contact your Bradley representative and ask for Repair Kit (part number S65-259).

### Problem: External leaks in the system

*Cause: O-rings have been damaged.*

**Solution:** Replace O-rings where necessary. For replacement of the O-rings, contact your Bradley representative and ask for Repair Kit (part number S65-259).

### Problem: Improper water temperature or temperature fluctuation

*Cause: Thermostat is slowly failing or not working at all.*

**Solution:** Check the thermostat for proper operation.

1. At room temperature (80° F or less) remove cap and thermostat.
2. Place thermostat into container with 115° F water. The pushrod should pop out of the thermostat approximately 1/10".
3. If thermostat pushrod does not pop out, the thermostat must be replaced. Contact your Bradley representative and ask for Repair Kit (part number S65-259).

*Cause: Valve temperature is not properly set.*

**Solution:** Adjust the temperature. Using a blade screwdriver, turn the adjustment stem **counterclockwise** to **increase** the temperature or **clockwise** to **decrease** the temperature.

## Vernatherm™ Thermostatic Mixing Valve (S01-524)

### Repair Kit S65-259

Item	Qty	Description
5	1	Thermostat
7	1	O-Ring
8	1	O-Ring

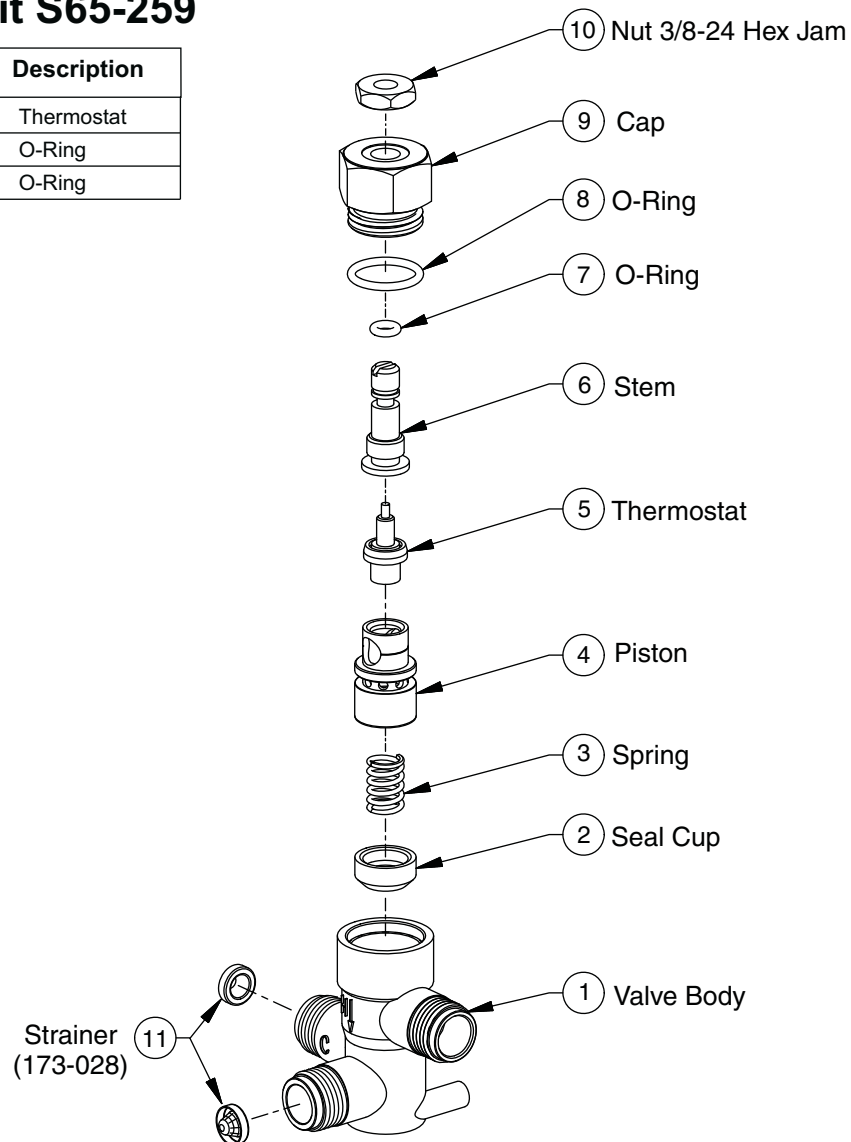


Figure 14

## Tempered Line Adapter Assembly (S39-685) Option

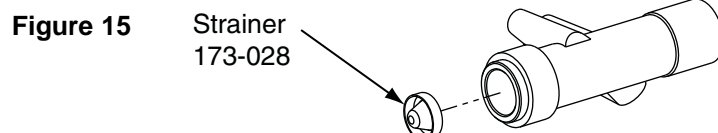


Figure 15